

**Office of Oversight  
Environment, Safety and Health**

*Independent Investigation  
of the*

# East Tennessee Technology Park

*Volume 1: Past Environment,  
Safety, and Health Practices*

October 2000



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Aspects of barrier plant operations are addressed in a separate, classified document.

## Abbreviations Used in Volume 1

|         |   |
|---------|---|
| ACBM    | Asbestos-Containing Building Materials                                |
| ACGIH   | American Conference of Governmental Industrial Hygienists             |
| AEA     | Atomic Energy Act   |
| AEC     | Atomic Energy Commission  |
| ALARA   | As Low As Reasonably Achievable                                       |
| ANSI    | American National Standards Institute                                 |
| CBD     | Chronic Beryllium Disease   |
| CERCLA  | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR     | Code of Federal Regulations   |
| CIP/CUP | Cascade Improvement Program/Cascade Upgrading Program                 |
| CROET   | Community Reuse Organization of East Tennessee                        |
| CTF     | Component Test Facility   |
| CWA     | Clean Water Act   |
| DCG     | Derived Concentration Guide   |
| D&D     | Decontamination and Decommissioning                                   |
| DOE     | U.S. Department of Energy   |
| DRS     | Decon Recovery Services of Oak Ridge, LLC                             |
| EH      | DOE Office of Environment, Safety and Health                          |
| EPA     | Environmental Protection Agency                                       |
| ERDA    | Energy Research and Development Administration                        |
| ES&H    | Environment, Safety, and Health                                       |
| ETTP    | East Tennessee Technology Park  |
| GAO     | General Accounting Office   |
| GCEP    | Gas Centrifuge Enrichment Project                                     |
| HS&EA   | Health Safety and Environmental Affairs                               |
| HSWA    | Hazardous and Solid Waste Amendments                                  |
| JSA     | Job Safety Analysis   |
| LDB     | Legionnaire's Disease Bacteria  |
| MAC     | Maximum Allowable Concentration                                       |
| M&EC    | East Tennessee Materials and Energy Corporation                       |
| mgd     | Million Gallons per Day   |
| NCRP    | National Committee on Radiation Protection                            |
| NESHAPS | National Emission Standard for Hazardous Air Pollutants               |
| NIOSH   | National Institute of Occupational Safety and Health                  |
| NPDES   | National Pollutant Discharge Elimination System                       |
| OCAW    | Oil, Chemical and Atomic Workers                                      |
| OJT     | On-the-Job Training   |
| OMI     | Operations Management International                                   |
| OR      | Oak Ridge Operations Office   |
| ORAU    | Oak Ridge Associated Universities                                     |
| ORISE   | Oak Ridge Institute for Science and Education                         |
| ORGDP   | Oak Ridge Gaseous Diffusion Plant                                     |
| ORNL    | Oak Ridge National Laboratory   |
| OSHA    | Occupational Safety and Health Administration                         |

*(Continued on Inside Back Cover)*

### **Abbreviations Used in Volume 1 (Continued)**

|       |  |
|-------|--|
| PAL   | Plant Allowable Limit                                |
| PCB   | Polychlorinated Biphenyl                             |
| PCE   | Perchloroethene                                      |
| PEL   | Permissible Exposure Limit                           |
| PPE   | Personal Protective Equipment                        |
| RCRA  | Resource Conservation and Recovery Act               |
| R&D   | Research and Development                             |
| RFI   | RCRA Feasibility Investigation                       |
| RPG   | Radiation Protection Guide                           |
| SEC   | Safety and Ecology Corporation                       |
| SPP   | Standard Practice Procedure                          |
| SWDA  | Solid Waste Disposal Act                             |
| TCE   | Trichloroethene                                      |
| TDEC  | Tennessee Department of Environment and Conservation |
| TDHE  | Tennessee Department of Health and Environment       |
| TFE   | Technical and Field Engineering                      |
| TLD   | Thermoluminescent Dosimeter                          |
| TLV   | Threshold Limit Value                                |
| TSCA  | Toxic Substances Control Act                         |
| TVA   | Tennessee Valley Authority                           |
| UPGWA | United Plant Guard Workers of America                |



## Department of Energy

Washington, DC 20585

### FOREWORD

In the summer of 1999, Secretary of Energy Bill Richardson directed the Office of Environment, Safety and Health to conduct independent investigations into serious concerns regarding historic and current environment, safety, and health practices at the nation's three gaseous diffusion plants—located at Paducah, Kentucky; Piketon, Ohio; and Oak Ridge, Tennessee. The objectives of these investigations were to determine the extent to which these practices may have adversely affected the health and safety of workers and the public and the quality of the surrounding environment.

The reports on Paducah were issued in two volumes and released in October 1999 and February 2000, followed by the Piketon report, which was issued in May 2000. This final report presents the conclusions from the third investigation at the Oak Ridge Gaseous Diffusion Plant (now today as the East Tennessee Technology Park). Like the two previous reports, this report provides a thorough and extensive analysis of current and historic operations and work practices, the specific hazards faced by plant workers, and the effectiveness of safety measures and management's commitment to ensuring protection of the workers, the public and the environment. The reports for all three sites can be found on the Department of Energy homepage at the following web address: <http://tis.eh.doc.gov/oversight/>.

The scope and level of effort expended in the conduct of this investigation is nearly unprecedented. Over 1,000 current and former workers, union personnel, and managers were interviewed; tens of thousands of documents and records were thoroughly examined—some dating back to the start of the World War II Manhattan Project; work activities and processes were observed; and dozens of soil and water samples from each of the three plant locations were carefully collected and independently tested for the presence of radioactive and chemical contamination.

There is no question that the gaseous diffusion plants were essential to our victory in the Cold War. Many new industrial processes and equipment were pioneered, developed, and tested at these plants. Workers at these plants were loyal, hardworking, and proud to serve a vital role in our nation's defense.

At the same time, the investigations reveal that a climate of urgency to produce weapons often took precedence over concerns for worker safety and health. Plant operators solely regulated safety and health; as a result, workers did not have the benefit of external regulation to protect their health. While the Department and its predecessors have always had internal standards to protect the workers, these standards were not always consistently followed or enforced. Workplace conditions were often harsh, and the hazards were serious. In addition, we found that some workers were exposed to hazardous chemicals and other materials and received radiation doses in excess of standards and may, as a result, have become ill from these exposures.

I would like to thank all those who contributed to these important investigations. The Department of Energy is committed to knowing which workers may have been made ill by the operation of the gaseous diffusion plants, and to acknowledge the government's responsibilities to these workers and their families. The results of this investigation, along with other Departmental studies, will help ensure that the Department meets these commitments.

A handwritten signature in black ink, appearing to read "D. Michaels", is positioned above the typed name of the Assistant Secretary.

David Michaels, PhD, MPH  
Assistant Secretary  
Environment, Safety and Health